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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,384	12/28/2000	Arlin R. Davis	219.39286X00	5581

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EXAMINER
LAZARO, DAVID R

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application N●●──	Applicant(s)
	09/749,384	DAVIS ET AL.
	Examiner	**Art Unit**	
	David Lazaro	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 March 2004</u>.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-22</u> is/are pending in the application.
     4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-22</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>19 April 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
     a)☐ All   b)☐ Some * c)☐ None of:
         1.☐ Certified copies of the priority documents have been received.
         2.☐ Certified copies of the priority documents have been received in Application No. _____.
         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-22 are pending in this Office Action.

Papers Received

2.   Declaration received 03/19/01.

3.   Formal drawings received 04/19/01.

4.   Withdrawal or Attorney received 06/19/03.

5.   Revocation and Power of Attorney received 03/01/04.

Specification

6.   The disclosure is objected to because of the following informalities:

a.   As provided in 37 CFR 1.77(b), the specification of a utility application

should include the following section:

BRIEF SUMMARY OF THE INVENTION.

b.   Page 10, line 19, "the variable credits" should be "the variable available

credits".

c.   Page 10, line 22-23, the last sentence on the page is unclear due to

grammatical errors.

d.   Page 11, lines 19-21, the specification states a message is presumed

dropped when the "message sent field" is less than or equal to the value of

"consumed credits". However, according to Fig. 7, "operation 715" determines a

message is dropped, 720, when the "message sent field" IS greater than the

value of "consumed credits". The examiner will examine by the interpretation of the operations in Fig. 7.

e.   The examiner notes that other minor informalities may exist and respectfully requests the applicant to please review the specification. Appropriate correction is required.

Claim Objections

7.   Claim 1 is objected to because of the following informalities: The examiner believes lines 10-11 should have "is greater than" instead of "is less than or equal to". This is based on Fig. 7 and logically assuming the limitation in Claim 2 should achieve a positive result if a dropped message occurred. Appropriate correction is required.

8.   Claims 2 and 7 are objected to because of the following informalities: There is inconsistency in terms of the limitation "available credits variable". In Claim 2, the "available credits variable represents a total amount of space allocated to receive messages from a particular node". In Claim 7, the "available credits variable represents the total number of messages the transmitting node may send". Appropriate correction is required.

9.   Claim 7 is objected to because of the following informalities: In line 4, "and available credits" should be "an available credits". Appropriate correction is required.

10.   Claim 9 is objected to because of the following informalities: In line 2, the

preamble is missing further structure as it ends with "when executed by a processor

results in, comprising:". Appropriate correction is required.

11.   Claim 17 objected to because of the following informalities: In line 3, "all

message" should be "all messages". Appropriate correction is required.

12.   Claim 20 is objected to because of the following informalities: In line 4, "when no

further credits remaining" should be changed to "when no available credits remain" (or a

phrase to that effect). Appropriate correction is required.

Claim Rejections - 35 USC § 102

13.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14.   Claims 1-3, 6-11, 14-19, 21 and 22 are rejected under 35 U.S.C. 102(b) as being

anticipated by H.T. Kung et al. "Credit-Based Flow Control for ATM Networks: Credit

update protocol, Adaptive credit allocation, and Statistical multiplexing" SIGCOMM,

1994 (Kung).

15.   With respect to Claim 1, Kung teaches a method of transmitting and receiving

messages in a network (Page 103-105, Sections 3-5), comprising: transmitting a flow

control message header to a transmitting node from a receiving node, wherein the flow

control header comprises a message sent field (Page 104, Section 5, Paragraph 2) and

a message limit field (Page 103, Section 4, Paragraph 2); transmitting a message from

the transmitting node to the receiving node and incrementing a send counter (Page 104,

Section 4, Paragraph 2); receiving the message by the receiving node and incrementing

a consumed credits variable (Page 104, Section 4, Paragraph 2); determining a

message was dropped when the message sent field is less than or equal to the value of

the consumed credits variable (Page 105, Section 5, Last Paragraph – 'To provide

protection...'); adjusting the message limit field to compensate for the dropped message

(Page 104, Section 5, Last Paragraph –'To provide protection...'); and transmitting the

message limit field to the transmitting node (Page 104, Section 5, Paragraph 2 and

Page 105, Section 5, Last Paragraph – 'To provide protection...').

16.   With respect to Claim 2, Kung teaches all the limitations of Claim 1 and further

teaches the determining a message was dropped further comprises: setting a variable

drop count equal to the message sent field less the consumed credits variable (Page

105, Section 5, Last Paragraph – 'To provide protection...'); determining if the variable

drop count is less than an available credits variable (Page 104, Section 5, Paragraph 2,

note that 'Vr' can be a drop count), wherein the available credits variable represents the

total amount of space allocated to receive messages from a particular node (Page 103,

Section 4, Paragraph 3); and increasing the message limit field value and transmitting

the flow control message header to the transmitting node (Page 104, Section 5,

Paragraph 2 and Page 105, Section 5, Last Paragraph – 'To provide protection...', the

message limit is inherently increased since any increase in 'Vr' will increase the message limit).

17.   With respect to Claim 3, Kung teaches all the limitations of Claim 2 and further teaches setting a new credits variable equal to the available credits variable plus the new credits; and setting the available credits variable to zero (Page 105, Section 5, Last Paragraph – 'To provide protection...').

18.   With respect to Claim 6, Kung teaches all the limitations of Claim 1 and further teaches transmitting at a predetermined time interval the flow control message header to the transmitting node, wherein a value contained in the message limit field is increased (Page 105, Section 5, Last Paragraph – 'To provide protection...').

19.   With respect to Claim 7, Kung teaches all the limitations of Claim 6 and further teaches the increase in the message limit field further comprises: incrementing send counter and the message sent field (Page 104, Section 5, Paragraph 2); incrementing and available credits variable by a new credits variable (Page 104, Section 5, Paragraph 2), wherein the available credits variable represents the total number of messages the transmitting node may send and the new credits variable represents additional messages that may be transmitted by the transmitting node (Page 105, Section 5, Last Paragraph – 'To provide protection...', note that 'Ur' or 'Vr' represents an available credits and 'lost cells' represent new credits); and setting the message limit field equal to the consumed credits variable plus the available credits variable (Page 104, Section 5, Paragraph 2).

20.   With respect to Claim 8, Kung teaches all the limitations of Claim 7 and further
teaches determining if a get credit variable is set to true, wherein the get credit variable
represents that additional messages may be sent by the transmitting node to the
receiving node (Page 103, Section 4, Paragraph 2); and incrementing the available
credits variable by the number of additional messages permitted (Page 104, Section 5,
Paragraph 2).

21.   With respect to Claim 9, Kung teaches an apparatus comprising a data storage
medium for storing instructions when executed by a processor results in, comprising:
transmitting a flow control message header to a transmitting node from a receiving
node, wherein the flow control header comprises a message sent field (Page 104,
Section 5, Paragraph 2) and a message limit field (Page 103, Section 4, Paragraph 2);
transmitting a message from the transmitting node to the receiving node and
incrementing a send counter (Page 104, Section 4, Paragraph 2); receiving the
message by the receiving node and incrementing a consumed credits variable (Page
104, Section 4, Paragraph 2); determining a message was dropped when the message
sent field is less than or equal to the value of the consumed credits variable (Page 105,
Section 5, Last Paragraph – 'To provide protection...'); adjusting the message limit field
to compensate for the dropped message (Page 104, Section 5, Last Paragraph – 'To
provide protection...'); and transmitting the message limit field to the transmitting node
(Page 104, Section 5, Paragraph 2 and Page 105, Section 5, Last Paragraph – 'To
provide protection...').

22.   With respect to Claim 10, Kung teaches all the limitations of Claim 9 and further teaches the determining a message was dropped further comprises: setting a variable drop count equal to the message sent field less the consumed credits variable (Page 105, Section 5, Last Paragraph – 'To provide protection...'); determining if the variable drop count is less than an available credits variable (Page 104, Section 5, Paragraph 2, note that 'Vr' can be a drop count), wherein the available credits variable represents the total amount of space allocated to receive messages from a particular node (Page 103, Section 4, Paragraph 3); and increasing the message limit field value and transmitting the flow control message header to the transmitting node (Page 105, Section 5, Paragraph 2 and Page 104, Section 5, Last Paragraph – 'To provide protection...', the message limit is inherently increased since any increase in 'Vr' will increase the message limit).

23.   With respect to Claim 11, Kung teaches all the limitations of Claim 10 and further teaches setting a new credits variable equal to the available credits variable plus the new credits; and setting the available credits variable to zero (Page 105, Section 5, Last Paragraph – 'To provide protection...').

24.   With respect to Claim 14, Kung teaches all the limitations of Claim 9 and further teaches transmitting at a predetermined time interval the flow control message header to the transmitting node, wherein a value contained in the message limit field is increased (Page 105, Section 5, Last Paragraph – 'To provide protection...').

25.   With respect to Claim 15, Kung teaches all the limitations of Claim 14 and further teaches the increase in the message limit field further comprises: incrementing send

counter and the message sent field (Page 104, Section 5, Paragraph 2); incrementing

and available credits variable by a new credits variable (Page 104, Section 5,

Paragraph 2), wherein the available credits variable represents the total number of

messages the transmitting node may send and the new credits variable represents

additional messages that may be transmitted by the transmitting node (Page 105,

Section 5, Last Paragraph – 'To provide protection...', note that Ur or Vr represents an

available credits and lost cells represent new credits); and setting the message limit

field equal to the consumed credits variable plus the available credits variable (Page

104, Section 5, Paragraph 2).

26.   With respect to Claim 16, Kung teaches all the limitations of Claim 9 and further

teaches determining if a get credit variable is set to true, wherein the get credit variable

represents that additional messages may be sent by the transmitting node to the

receiving node (Page 103, Section 4, Paragraph 2); and incrementing the available

credits variable by the number of additional messages permitted (Page 104, Section 5,

Paragraph 2).

27.   With respect to Claim 17, Kung teaches a system for transmitting and receiving

messages in a network (Page 103-105, Sections 3-5), comprising: a receive done

module to determine that all message transmitted have been received based upon a

flow control header (Page 105, Section 5, Paragraph 2), wherein the flow control header

comprises a message sent field (Page 104, Section 5, Paragraph 2) and a message

limit field (Page 103, Section 4, Paragraph 2); and a post send module to update an

available credits variable, wherein the available credits variable indicates the total

number of messages a transmitting node may send to a receiving node (Page 104,

Section 5, Paragraph 2).

28.   With respect to Claim 18, Kung teaches all the limitations of Claim 17 and further

teaches the receive done module increments a consumed credits variable and

compares the consumed credits variable to the message sent field to determine if a

message has been dropped (Page 104, Section 5, Last Paragraph – 'To provide

protection...').

29.   With respect to Claim 19, Kung teaches all the limitations of Claim 18 and further

teaches the receive done module will add an additional value to the message limit field

when it is determined that a message has been dropped. (Page 105, Section 5,

Paragraph 2 and Page 104, Section 5, Last Paragraph – 'To provide protection...', the

message limit is inherently increased since any increase in 'Vr' will increase the

message limit).

30.   With respect to Claim 21, Kung teaches all the limitations of Claim 19 and further

teaches a post receive module to increment a new credit variable and process pending

message requests (Page 105, Section 5, Last Paragraph).

31.   With respect to Claim 22, Kung teaches all the limitations of Claim 19 and further

teaches a periodic update module to determine at a predetermined time interval if a

transmitting node has run out of credits used to transmit messages with (Page 105,

Section 5, Last Paragraph).

Claim Rejections - 35 USC § 103

32.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

33.   Claims 4, 5, 12, 13 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kung in view of U.S. Patent 6,658,469 by Massa et al. (Massa).

34.   With respect to Claim 4, Kung teaches all the limitations of Claim 3 and further

teaches setting a send limit equal to the message limit field (Page 103, Section 4,

Paragraph 3). Kung does not explicitly disclose executing a threshold module. Massa

teaches the execution of a threshold module in a credit-based message transmission

system (Col. 16 lines 22-38). It would have been obvious to one of ordinary skill in the

art at the time the invention was made to take the method disclosed by Kung and

modify it as indicated by Massa such that the method further comprises executing a

threshold module. One would be motivated to have this as there is need for a flow

control protocol that works efficiently for all applications (Col. 3 lines 21-25 and Col. 16

lines 47-58 of Massa).

35.   With respect to Claim 5, Kung in view of Massa teaches all the limitations of

Claim 4 and further teaches the threshold module further comprising: determining if the

available credits variable is less than a credit threshold variable; and transmitting the

flow control message header to the transmitting node (Col. 16 lines 22-38 of Massa).

36.   With respect to Claim 12, Kung teaches all the limitations of Claim 11 and further

teaches setting a send limit equal to the message limit field (Page 103, Section 4,

Paragraph 3). Kung does not explicitly disclose executing a threshold module. Massa

teaches the execution of a threshold module in a credit-based message transmission

system (Col. 16 lines 22-38). It would have been obvious to one of ordinary skill in the

art at the time the invention was made to take the method disclosed by Kung and

modify it as indicated by Massa such that the method further comprises executing a

threshold module. One would be motivated to have this as there is need for a flow

control protocol that works efficiently for all applications (Col. 3 lines 21-25 and Col. 16

lines 47-58 of Massa).

37.   With respect to Claim 13, Kung in view of Massa teaches all the limitations of

Claim 12 and further teaches the threshold module further comprising: determining if the

available credits variable is less than a credit threshold variable; and transmitting the

flow control message header to the transmitting node (Col. 16 lines 22-38 of Massa).

38.   With respect to Claim 20, Kung teaches all the limitations of Claim 19 and further

teaches updating the message limit field to include additional credits when no further

credits remaining for the transmitting node (Page 103, Section 4, Paragraph 2). Kung

does not explicitly disclose a threshold check module to determine if the transmitting

node has any available credits remaining. Massa teaches the execution of a threshold

module to check the available credits remaining in a credit-based message transmission

system (Col. 16 lines 22-38). It would have been obvious to one of ordinary skill in the

art at the time the invention was made to take the system disclosed by Kung and modify

it as indicated by Massa such that the system further comprises a threshold module to determine if the transmitting node has any available credits remaining. One would be motivated to have this as there is need for a flow control protocol that works efficiently for all applications (Col. 3 lines 21-25 and Col. 16 lines 47-58 of Massa).

Conclusion

39.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

40.   U.S. Patent 5,896,511 by Manning et al. "Method and apparatus for providing buffer state flow control at the link level in addition to flow control on a per-connection basis" April 20, 1999. Discloses a 'check event' that enables accounting for messages either dropped or not received.

41.   U.S. Patent 5,825,748 by Barkey et al. "Credit-based flow control checking and correction system" October 20, 1998. Discloses a period check for whether a credit gain or loss has occurred in they system and makes adjustments to the allocated credits as needed.

42.   U.S. Patent 6,076,112 by Hauser et al. "Prioritzed access to shared buffers" June 13, 2000. Similar to Manning cited above.

43.   U.S. Patent 6,243,358 by Monin "Process and device for allocating resources in a packet transmission digital network" June 5, 2001. Discloses flow control based on credit allocation with determinations for lost packets.

44.   U.S. Patent 6,594,701 by Forin "Credit-based methods and systems for

controlling data flow between a sender and a receiver with reduced copying of data"

July 15, 2003. Discloses a credit based flow control system with modules for

determining if new credits are available.·

45.   H.T. Kung.et al. "Credit-Based Flow control for ATM networks" IEEE Network,

March/April 1995, Vol. 9, Issue 2., p. 40-48.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to David Lazaro whose telephone number is 703-305-

4868. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hosain Alam can be reached on 703-308-6662. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

David Lazaro
May 28, 2004

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER